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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/520,853
Filing Date: January 10, 2005
Appellant(s): THIELERT, HOLGER

Frederick J. Dorchak
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 5/24/2010 appealing from the Office action mailed 10/26/09.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

1, 2 and 4-7

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN

REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

GB 2221853 A	LUINSTRA	2-1990
US 5,494,003	BARTZ	2-1996
US 5,921,079	HARRIS	7-1999
US 3,822,337	WUNDERLICH	7-1974
JP 06-200354	NOBUHIRO	7-1994

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luinstra (GB 2221853 A) in view of Bartz et al. (US 5,494,003) and Harris (US 5,921,079).

Regarding claims 1 and 7, Luinstra discloses a fission reactor for a Claus plant (see abstract), comprising a boiler (1) lined with refractory material (page 4 lines 32-33), which comprises a combustion chamber (15) having an inflow opening (3) for a mixture of heating gas, air and acid gas containing H2S, a catalyst chamber (13) having a catalyst bed (13) of loose catalyst material (see page 5, lines 16-18 which discloses a catalyst bed comprised of particles), and an outflow-side chamber (7) having a gas outlet (7) for hot process gas containing elemental sulfur, wherein the boiler (1) is configured as a

horizontal cylindrical boiler (see Fig. 1), in which the combustion chamber (15), the catalyst chamber (13), and the outflow-side chamber (7) are disposed next to one another (see Fig. 1).

Luinstra teaches a catalyst chamber which is delimited on both sides, in the flow direction, by two wire screens (page 5, lines 16-18) which is in high temperature service, but fails to teach the catalyst chamber is delimited, on both sides, in the flow direction, by gas-permeable checker bricks containing elongated holes.

Bartz also discloses utilizing screens in high temperature service (col. 1, Lines 29-33).

Bartz teaches using a perforated ceramic plate/checkered brick in place of a screen when used in high temperature service in order to improve durability and prevent the problems associated with screens in high temperature service such as warping (col. 2 lines 2-8).

As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace the screens of Luinstra with the perforated ceramic plate/checkered brick of Bartz in order to improve durability and prevent the problems associated with screens in high temperature service such as warping.

Furthermore, Luinstra teaches a cylindrical reaction vessel in which a catalyst is place, but does not teach a mantle-side fill opening disposed between the gas-permeable checker bricks for introducing the catalyst bed wherein said mantle-side fill opening comprises a flange tube.

Harris also discloses a cylindrical reaction vessel in which a catalyst is placed (see abstract and Fig. 1).

Harris teaches a mantle side fill opening (55) which is sealed with a flange (57) and is placed in the shell in order to facilitate catalyst removal and replacement of the catalyst contained inside (col. 5 lines 26-330).

As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the mantle side fill opening and sealing flange of Harris to the apparatus modified Luinstra between the checker bricks in order to facilitate removal and replacement of the catalyst of Luinstra.

In addition, while Luinstra, as modified above, does not explicitly disclose that there are a plurality of gas-permeable checkered bricks on each side of the catalyst chamber, however, such a modification is nothing more than making the checker brick structure of modified Luinstra separable. In other words, for purposes of maintenance and assembly, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the checker bricks of modified Luinstra separable in order to facilitate removal of the checker bricks through the small openings of the fission reactor (see Fig. 1 of Luinstra which shows that a single checker brick on either side of the catalyst chamber (13) would not be able to be removed through the smaller openings on either end of the fission reactor).

Regarding claim 2, Luinstra further discloses the inflow opening (3) and the gas outlet (7) are disposed on opposite faces of the boiler (see Fig. 1).

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luinstra (GB 2221853 A) in view of Bartz et al. (US 5,494,003) and Harris (US 5,921,079) as applied to claim 1 above, and further in view of Wunderlich et al. (US 3,822,337).

Regarding claims 4 and 5, Luinstra teaches a fission reactor for a Claus plant, but fails to teach:

wherein on the circumference of the outflow-side chamber, a branch line lined with refractory material is connected, which opens into a process gas line adjacent to the boiler, in the opening region of the branch line, a valve body is disposed in adjustable manner, with which the amount flow of a hot gas stream that exits from the branch line can be regulated, and a cooler process gas passes through the process gas line, which cools the valve body and a setting device assigned to the valve body, and

wherein a waste heat boiler (4) is connected with the gas outlet (13), in which the hot process gas that exits from the boiler (9) is cooled for the condensation of elemental sulfur, and steam is generated, and wherein the branch line (16) opens into a process gas line (17) that is connected with the waste heat boiler (4) and passes the cooled process gas to a catalyst stage (5) of the Claus plant.

Wunderlich also discloses a fission reactor for a Claus plant (see abstract).

Wunderlich teaches a branch line (52) lined out from an outflow size of the discharge chamber (203a) and joins in with a process stream (at 215), with a valve body (54) where the amount of hot gas can be regulated and the cooler process gas passes through the process gas line (after a waste heat boiler 212) which generates steam, and passes the cooled process gas to a catalyst stage (Claus oven). Wunderlich teaches this configuration

in order to control the temperature of the process gas stream to make it suitable for the downstream Claus reaction processes (col. 7 lines 53-56 and col. 8 lines 72-75).

As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the branch line, valve and the waste heat boiler of Wunderlich to the fission reaction apparatus of modified Luinstra in order to control the temperature of the process gas stream to make it suitable for the downstream Claus reaction processes.

Regarding limitations recited in claim 4 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Luinstra (GB 2221853 A) in view of Bartz et al. (US 5,494,003) and Harris (US 5,921,079) and Wunderlich et al. (US 3,822,337) as applied to claim 4 above, and further in view of Nobuhiro (JP 06-200354).

Regarding claim 6, Luinstra, as modified above, teaches a valve body and setting device which is used to regulate temperature in a hot environment, but does not go into specifics as to the structure of the actual valve. In other words, Luinstra does not explicitly disclose said valve body and said setting device consist of metallic material.

Nobuhiro also discloses a valve used in high temperature service.

Nobuhiro teaches constructing the valve of a metallic material (see abstract) in order to improve the valve strength at high temperatures as well as reducing fatigue of the material (see abstract).

As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to construct the valve body and setting device of modified Luinstra out of a metallic material (as taught by Nobuhiro) in order to improve the valve strength at high temperatures as well as reducing fatigue of the material.

(10) Response to Argument

On pages 11 and 12 (bridging paragraph), Appellant argues that Luinstra does not teach loose catalyst bulk material. The examiner respectfully disagrees with this argument. Luinstra explicitly discloses (on page 5, lines 16-18):

"In a further embodiment of the invention the rigid permeable catalyst structure comprises a layer of particles arranged between vertical screens."

The examiner sees this as an explicit disclosure that the catalyst of Luinstra comprises "particles" which reads on the claimed "loose bulk material". The "rigid permeable catalyst structure" that is disclosed by Luinstra is referring to the rigidity of the particles when they are held together by two vertical screens. Furthermore, if the catalyst of Luinstra was in fact rigid, there would be no need for the vertical screens to be placed on either side of the catalyst. In other words, the vertical screens are used in Luinstra for the purpose of holding the particles/loose bulk material in a rigid shape during operation.

This argument is repeated in the first paragraph of page 13.

On pages 14 and 15 (bridging paragraph), Appellant argues that Bartz is nonanalogous to Luinstra. The examiner respectfully disagrees with this argument. The apparatus of Bartz is utilized in an oxidation reaction, just like the apparatus of Luinstra. In other words, it is the examiner's position that Bartz and Luinstra are both directed towards high temperature combustion reactions where the associated materials of each combustion chamber are subjected to high temperatures.

On page 15, Appellant argues that the perforated ceramic plate of Bartz is not the equivalent to the claimed "checker bricks". The examiner respectfully disagrees with this argument. In the claims, there is nothing that further limits the checker bricks (such as size, thickness, etc.) and therefore, it is the examiner's position that the ceramic/refractory material of Bartz, which comprises a plurality of holes in a ceramic plate does indeed meet the 'checker brick' limitation of the claim. In addition, the perforated ceramic plate of Bartz is the same as the checkered brick that applicant discloses in an embodiment (see specification page 6) which discloses that the checkered bricks are made of a refractory material (i.e. ceramic) with elongated holes (such as the perforation holes of Bartz which extend through the entire thickness of the ceramic plate).

On page 17, first full paragraph, Appellant argues that one of ordinary Skill would not be motivated to combine Luinstra and Bartz because Luinstra teaches that the most temperature sensitive element is the catalyst, not the wire screens. The examiner respectfully disagrees with this argument. Regardless of what element is most sensitive to temperature, there is still

motivation to one of ordinary skill in the art to replace the high temperature warping-prone screens with a more durable ceramic checker brick.

On page 18, second full paragraph, Appellant argues that none of the claimed references (Luinstra, Bartz or Harris) disclose a mantle side fill opening. The examiner respectfully disagrees with this argument. The mantle side fill opening of Harris provides benefits (such as facilitation of catalyst replacement) that are not limited to rigid catalyst structures. In other words, the loose bulk material of Luinstra would exhibit the same benefits of a mantle-side fill opening as that of a rigid catalyst material… such as providing a fast way of removing and replacing deactivated/spent catalyst.

On pages 27 and 28, Appellant argues that Wunderlich does not teach a Claus furnace but rather a reactor that is upstream of a Claus furnace/oven. The examiner notes, however, that although the Wunderlich system is not identical to the system of Luinstra, there are benefits of providing a branch/bypass to the system of Luinstra. As stated in the Final Rejection, providing such a bypass line allows for the control of temperature for any downstream processes that are fed with the effluent of the fission reactor of Luinstra. In the example of Wunderlich, the purpose is to provide the correct temperature for the combustion reactor and Claus plant downstream of Wunderlich. In Luinstra, it would be to provide the correct temperature for a process which utilizes the elemental sulfur produced in the reactor of Luinstra.

On pages 28 and 29 (final of 28 and first paragraph of 29), Applicant argues that the valve of Wunderlich is not cooled by the process gas and is not located at the opening region of the branch line. The examiner respectfully disagrees with this argument. The valve of Wunderlich is indeed located in the opening 'region' of the branch line (53, see Fig. 3). In other

words, there is not explicit definition of what is meant by the term 'region', therefore, the examiner has interpreted this as meaning anywhere reasonably close to the branch line opening, which the valve of Wunderlich is (see Fig. 3). Furthermore, regarding the cooling of the valve... the valve will inherently be cooled due to radiation of the close proximity cool process gas (which has just exited the waste heat boiler). Appellant appears to admit this on page 20 which states "any cooling due to proximity to short pipe 215 would be minimal". As best understood, it appears as though Appellant admits that such heat transfer does indeed take place, even if it is a small amount. Furthermore, regarding the limitation regarding the cooling of the valve, there are no limitations in the claim that explicitly state any structural relationship between the cool process gas and the valve itself. Relating these two structures by mere heat transfer properties does not distinguish the instant claim over the prior art.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/M. J. M./

Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795

Conferees:

Alexa D. Neckel /A.D.N./

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